CENTERS FOR DISEASE CONTROL

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529 Non-A, Non-B Hepatitis — Illinois
532 Progress Toward Eradicating Poliomyelitis from the Americas
536 Urogenital Anomalies in the Offspring of Women Using Cocaine during Early Pregnancy — Atlanta, 1968–1980
543 Chronic Disease Reports: Deaths from Diabetes — United States, 1986
546 End-Stage Renal Disease Associated with Diabetes — United States, 1988

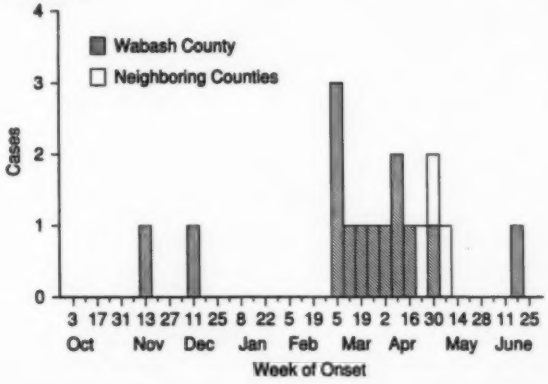
Epidemiologic Notes and Reports

Non-A, Non-B Hepatitis — Illinois

From November 15, 1988, through June 30, 1989, 17 cases of non-A, non-B (NANB) hepatitis were reported to the Wabash County (Illinois) Health Department. In Wabash County, a small rural county in southern Illinois (estimated 1987 population: 13,800), only one other case of NANB hepatitis had been reported since 1982.

Of the 17 reported cases, 14 met a case definition for NANB hepatitis: an acute illness with symptoms and signs of hepatitis, elevated serum alanine aminotransferase (ALT) levels >2.5 times the upper limit of normal, and negative serologic markers for acute hepatitis A and B. Interviews with local physicians and review of the county hospital's medical records and emergency room log books detected no other cases among Wabash County residents since September 1988, but three cases were identified in neighboring counties (Figure 1). Based on cases reported from January through June 1989, the annual rate of NANB hepatitis for Wabash County was 87.0 per 100,000 population, more than 100 times higher than the rate for all of Illinois during 1988 (0.7 per 100,000). Of the 17 cases in Wabash and neighboring county

FIGURE 1. Non-A, non-B hepatitis cases, by week of onset — southern Illinois, October 1988–June 1989



Hepatitis — Continued

residents, six (35%) were male; 16 (94%) were white, and one was American Indian; and the median age was 28 years (range: 14–36 years). Nine (53%) patients were clinically jaundiced, and nine (53%) required hospitalization for their acute illness. Peak ALT values at onset of illness ranged from 201 to 3950 (median: 1493).

Patients were contacted to identify potential risk factors for acquiring NANB hepatitis. For 12 patients, information was obtained by interview, and for five, from medical chart review. Seven (41%) patients admitted to intravenous (IV)-drug use, and five (29%) were suspected IV-drug users. Of the seven who admitted IV-drug use, four used heroin and/or cocaine; one used heroin, cocaine, and methamphetamine; one used only methamphetamine; for one, the drug was unknown. Three of the 12 patients reported drinking >55 ounces of alcohol per week. None of the patients reported blood transfusion within 6 months before onset of illness; none reported employment in a health-care setting with frequent blood exposure; and none reported sexual contact within 6 months before onset of illness with a person known to have had NANB hepatitis.

Blood specimens were obtained in late May and in June from 12 of the patients and 28 of their household, sexual, and needle-sharing contacts. All contacts denied symptoms of hepatitis. However, four had abnormal ALT values: three with histories of IV-drug use (elevations of 57–91 units/liter [upper limits of normal range from 36 to 53]) and a 6-year-old boy (ALT of 430) whose mother was a case-patient. All contacts were negative for IgM antibody to hepatitis B core antigen; of those with elevated ALT values, all were negative for IgM antibody to hepatitis A virus. Serologic testing of patients and contacts using a new assay for a parenterally transmitted NANB hepatitis virus is pending (*1*). Efforts will be made to obtain follow-up specimens to determine the extent of transmission to household and sexual contacts.

IV-drug use has existed in the county for many years; most drug users are thought to reside within the community and to have limited interaction with drug users from other areas. However, the apparent index patient was an IV-drug user who had lived intermittently in other states; he had recently returned to the area and became ill 1 week after arrival in November. Before his illness, he shared needles with another person who became ill 4 weeks later. Among the cases in March and April, two distinct clusters occurred that involved persons who were both friends and known or suspected IV-drug users. During the New Year holiday, some of these persons attended parties at which IV drugs were reportedly used. One IV-drug user reported that, because the area's needle supply had been scarce during the past year, needle-sharing had increased.

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Editorial Note: Parenterally transmitted NANB hepatitis accounts for 20%–40% of acute viral hepatitis in the United States. Although it has traditionally been considered a transfusion-associated disease, studies of community-acquired NANB hepatitis and data from the CDC national surveillance system have shown that 23%–42% of NANB hepatitis cases are associated with IV-drug use (*2,3*); in addition, 8%–11% are attributed to blood transfusion and 4%–8% to health-care occupational exposure. However, for as many as 57%, no source of infection can be identified (*3*). In this outbreak, the high proportion of ill persons who were confirmed or suspected IV-drug users and the lack of an identifiable common hepatotoxic chemical or drug suggest that the etiologic agent is parenterally transmitted NANB hepatitis virus.

Hepatitis — Continued

Community-based outbreaks of parenterally transmitted NANB hepatitis have not been reported previously in the United States. Large outbreaks of NANB hepatitis occur in developing countries (*4*); however, in these settings, the disease is transmitted enterically and is caused by an agent distinct from that causing parenterally transmitted NANB hepatitis (*5*). This enterically transmitted form of disease is not believed to occur in the United States except for occasional imported cases (*6*).

The role of person-to-person contact in the transmission of NANB hepatitis in the United States has not been well defined. Transmission between spouses has been observed (*7*). In addition, a recent case-control study of patients with acute NANB hepatitis showed that contact with multiple heterosexual partners and household or sexual contact with a person who had had hepatitis were associated with risk for disease (*8*).

A portion of the genome of a virus that is probably a major cause of parenterally transmitted NANB hepatitis was recently cloned and a candidate serologic assay was developed (*1,9*). The assay should assist with studies of the mechanisms and extent of transmission of NANB hepatitis outside the transfusion setting, such as transmission by household and sexual contact. Previous studies of household and sexual transmission of NANB hepatitis using ALT testing have been limited by the lack of specificity of ALT values and the possibility of asymptomatic, biochemically silent transmission.

IV-drug use traditionally has been considered a problem of urban areas. The recognition of a high prevalence of drug use and an associated epidemic of a bloodborne disease in this rural community and the increased recognition of outbreaks of hepatitis A and B among drug users in rural settings (*10–12*) emphasize that IV-drug use is not limited to urban areas. This recognition also underscores the need for prevention and treatment programs in many geographic areas.

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Current Trends

Progress Toward Eradicating Poliomyelitis from the Americas

The World Health Organization (WHO) estimates that >250,000 cases of paralytic poliomyelitis occur each year worldwide (WHO, unpublished data, 1986). The introduction and widespread use of inactivated poliovirus vaccine (IPV) in 1955 and live, attenuated oral poliovirus vaccine (OPV) in 1961 dramatically affected the reported incidence of poliomyelitis in the United States and other developed countries (*1*).

During the early 1980s, intensive, biannual national vaccination campaigns substantially reduced the number of polio cases in Brazil (*2*). In addition, from 1975 to 1984, the number of countries in the Western Hemisphere reporting cases decreased from 19 to 11. These successes led the Pan American Health Organization (PAHO) in 1985 to establish a goal of and a plan for eradication of the indigenous transmission of wild polioviruses from the Americas by the end of 1990. A major objective of the plan was to establish regional and national surveillance systems so that 1) all cases of acute flaccid paralysis could be rapidly investigated to determine whether they were polio-related and 2) control measures to stop transmission could be rapidly implemented after the report of a suspected case of polio. A second major objective was to increase vaccination levels with three doses of OPV to at least 80% in children by 1 year of age in each country of the region by 1990.

Progress has been made since the goal was announced, particularly since April 1987, when the plan received formal funding. The intensification of surveillance activities since 1986 resulted in a 77% increase in notification of acute flaccid paralysis regionwide in 1988 over that in 1985 (Table 1). Despite this increase, the incidence of confirmed* polio reported in the region has declined. In 1988, 335 confirmed cases were reported in the Americas (Table 1), representing a 64% decline from 1986 (930 cases) and a 49% decline from 1987 (652 cases). In addition, the stable, low level of polio activity in the region during 1988, as well as the absence of large outbreaks (Figure 1) (such as occurred in Brazil in 1986), suggest that transmission of polio has been substantially suppressed. In 1989, as of July 22, 66 confirmed cases of polio have been reported, representing a 71% decrease from the 224 cases reported during the same period in 1988.

Since 1987, the laboratory network for characterizing polioviruses isolated from stool specimens obtained from persons with suspected polio has been greatly strengthened. Preliminary laboratory data for 1988 indicate that 32† wild polioviruses were isolated from patients in five countries, compared with 43 isolates from patients in six countries in 1987.

*The following case definitions for paralytic poliomyelitis have been implemented by PAHO: A *suspected case* is any acute onset of paralysis in a person <15 years of age for any reason other than severe trauma, or paralytic illness in a person of any age in which polio is suspected. The classification of a suspected case is temporary; within 48 hours of notification, the case should be reclassified as "probable" or "discarded." A *probable case* is a suspected case with acute flaccid paralysis and no other cause that can be immediately identified. The classification of a probable case is also temporary, and within 10 weeks of its onset the case should be reclassified as "confirmed" or "discarded." A probable case is classified as *confirmed* if there is: 1) laboratory confirmation (wild virus grown from stool or a ≥4-fold rise in poliovirus neutralization antibody titer between acute and convalescent serum specimens); 2) epidemiologic linkage to a probable or confirmed case; 3) residual paralysis 60 days after onset; 4) death; or 5) lack of follow-up of the case.

†Does not include a wild poliovirus type 1 isolate from a patient in Canada (*3*).

Poliomyelitis — Continued

The decrease in the proportion of "municipios" (counties or districts) with confirmed polio cases in the region during 1985–1988 also indicates substantial progress (Table 2). Only 1.9% of the nearly 14,400 municipios reported confirmed polio cases in 1988, suggesting that circulation of wild poliovirus is focal and confined to a small proportion of geopolitical units.

Regionwide data on polio vaccination levels, which have been available since 1978, should be interpreted with caution because of changes over time in the methodology for assessing coverage, in the personnel assessing the data, and in the population estimates used as denominators in the calculations. Regionwide OPV coverage of children by 1 year of age based on three doses of vaccine was estimated at 82% in 1988. However, four countries (Brazil, Cuba, Mexico, and Paraguay), constituting 56% of the total annual birth cohort in the region, rely primarily on

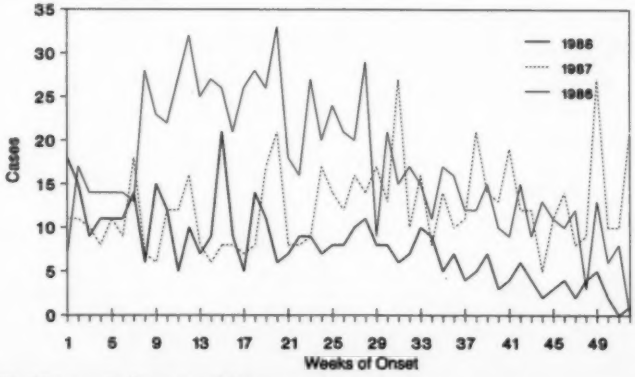
TABLE 1. Reported poliomyelitis cases and case classification — Region of the Americas, 1985–1989*

Year	Reported cases	Case classification		
		Confirmed	Discarded	Probable
1985	1075	673	402	0
1986	1587	930	657	0
1987	1679	652	1027	0
1988	1905	335†	1570	0
1989*	888	66	433	389

*Provisional data through week 29 of 1989.

†The breakdown by country of confirmed polio cases is as follows: Brazil (106), Peru (58), Colombia (44), Guatemala (38), Venezuela (30), Mexico (20), El Salvador (9), Ecuador (8), Haiti (8), Honduras (6), Argentina (4), Bolivia (2), Dominican Republic (1), and Canada (1). This includes cases classified as vaccine-associated from Argentina (4) and Dominican Republic (1). Data are pending for 1988 on vaccine-associated polio cases from the United States.

FIGURE 1. Week of onset of symptoms of confirmed cases of poliomyelitis — Region of the Americas, 1986–1988



Source: Weekly reports from countries.

Poliomyelitis — Continued

biannual national vaccination campaigns for routine vaccination of infants and report OPV coverage based on two doses of vaccine. A separate analysis was done that comprises only the 35 countries that report data based on three doses of vaccine (Figure 2). A steady increase in OPV coverage based on three doses occurred during 1980–1988 in these countries, reaching an all-time high of 71% in 1988. Nonetheless, the goal of achieving vaccination levels of at least 80% in these countries by 1990 will be difficult to achieve. Special vaccination efforts, including house-to-house vaccination, are under way in several countries to attempt to achieve this goal.

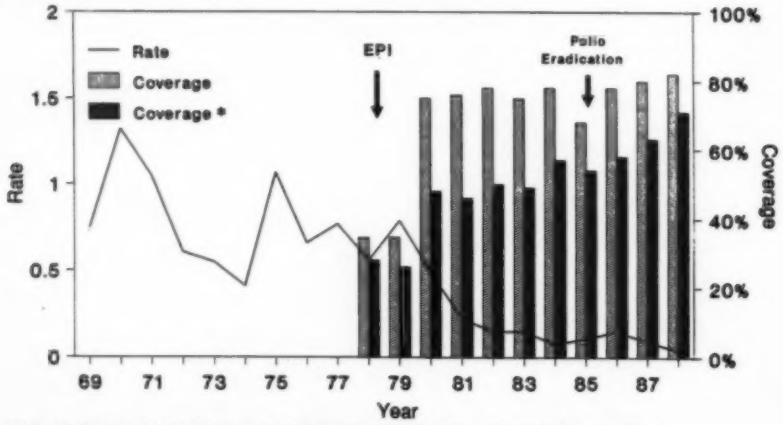
Reported by: Expanded Programme on Immunization, Pan American Health Organization, Washington, DC. International Health Program Office; Respiratory and Enterovirus Br, Div of Viral Diseases, Center for Infectious Diseases; Surveillance, Investigations, and Research Br, Div of Immunization, Center for Prevention Svcs, CDC.

TABLE 2. Number and percentage of municipios with confirmed poliomyelitis cases — Region of the Americas, 1985–1989

Year	No. municipios	Percentage of municipios*
1985	390	2.7
1986	537	3.7
1987	449	3.1
1988	279	1.9
1989†	40	0.3

*N = 14,372.
†Through week 26.

FIGURE 2. Rate per 100,000 population of reported paralytic poliomyelitis and oral poliovirus vaccine coverage in children <1 year of age — Region of the Americas, 1969–1988



*Excludes Brazil, Cuba, Mexico, and Paraguay since they use only two doses.
Source: Pan American Health Organization.

Poliomyelitis — Continued

Editorial Note: The eradication of smallpox in 1977 suggested the potential for eradication of other infectious diseases. In 1985, PAHO embarked on an initiative to eradicate the indigenous transmission of wild polioviruses in the Western Hemisphere by 1990. Reported polio in the region declined by 64% during 1986–1988; a record low of 335 confirmed cases was reported in 1988. The circulation of wild poliovirus is probably focal within the region. Polio surveillance systems are functioning well in all countries of the region. Despite improvement in capability of isolating wild polioviruses since 1987, the decrease in the number of wild virus isolates provides additional evidence of progress in interrupting circulation of wild poliovirus in the region. If the current level of effort is sustained and special efforts are directed toward the remaining foci of infection, eradication of polio from the Americas probably can be achieved.

Even though progress toward polio elimination has been substantial, indigenous polio transmission may continue in at least one country after 1990. Those countries at highest risk include Brazil, Colombia, Guatemala, Haiti, Mexico, and Peru. Technical and operational problems must still be addressed and overcome if the initiative is to succeed.

Financial support is crucial to the success of the project. In addition to ongoing support by the governments of the member states of PAHO, several donor agencies have contributed to a grant totaling $47.6 million for 1987–1991 (U.S. Agency for International Development [$20.6 million], Rotary International [$10.7 million], Inter-American Development Bank [$6.6 million], United Nations Children's Fund [$5.0 million], and PAHO/WHO [$4.7 million]). Overall project direction and management have been provided by PAHO's Expanded Programme on Immunization office.

The prospect of polio eradication in the Americas led the 41st World Health Assembly of WHO to adopt a resolution in May 1988 to eradicate poliomyelitis from the world by the year 2000 (*4*). The U.S. government is committed to providing technical and financial assistance for the eradication effort.

Global eradication of poliomyelitis can be accomplished by a strategy that includes achievement and maintenance of high immunization levels, effective surveillance to detect all new cases, and a rapid vigorous response to the occurrence of new cases (*5*). International collaboration will be necessary to achieve this goal. Operational obstacles must be overcome to ensure vaccination of all persons, and research efforts must be directed at improving vaccination schedules and/or formulations of existing vaccines. Eradication of polio in the Americas is an essential first step in the strategy toward global eradication.

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Urogenital Anomalies in the Offspring of Women Using Cocaine during Early Pregnancy — Atlanta, 1968–1980

Recent clinical and animal studies have suggested a possible association between maternal cocaine use early in pregnancy and the occurrence of congenital urogenital anomalies. To study that association, CDC analyzed data obtained in 1982–1983 from the population-based Atlanta Birth Defects Case-Control Study (ABDCCS). The results suggest that mothers who reported cocaine use early in pregnancy had a nearly fivefold higher risk of having babies with urinary tract anomalies than mothers who reported no cocaine use (*1*).

The ABDCCS collected information from parents of babies with major congenital anomalies who were born in the metropolitan Atlanta area from 1968 through 1980 and who were identified through the Metropolitan Atlanta Congenital Defects Program. Of 7133 eligible case-babies, interviews were completed by 4929 (69%) of case-mothers. Birth certificates were used to identify babies without birth defects born in the same area. Controls were matched with case-babies by race, hospital of

(Continued on page 541)

TABLE I. Summary — cases of specified notifiable diseases, United States

Disease	31st Week Ending			Cumulative, 31st Week Ending		
	Aug. 5, 1989	Aug. 6, 1988	Median 1984-1988	Aug. 5, 1989	Aug. 6, 1988	Median 1984-1988
Acquired Immunodeficiency Syndrome (AIDS)	573	U*	188	20,118	18,839	7,344
Aseptic meningitis	254	126	336	3,431	2,931	3,435
Encephalitis: Primary (arthropod-borne & unspec)	22	21	28	377	446	547
Post-infectious	1	1	1	52	72	72
Gonorrhea: Civilian	15,324	13,535	16,199	385,980	401,518	479,058
Military	92	189	389	6,264	7,195	9,825
Hepatitis: Type A	529	489	474	19,934	14,584	13,056
Type B	458	417	619	13,409	13,166	14,990
Non A, Non B	36	60	75	1,420	1,566	2,162
Unspecified	28	31	99	1,416	1,240	2,756
Legionellosis	27	14	14	558	547	420
Leprosy	2	3	5	94	99	136
Malaria	23	26	26	687	497	514
Measles: Total†	240	179	92	8,941	1,988	2,161
Indigenous	234	167	74	8,555	1,778	1,904
Imported	6	12	10	386	210	254
Meningococcal infections	33	32	37	1,794	1,959	1,888
Mumps	58	65	63	3,523	3,280	3,060
Pertussis	110	58	94	1,568	1,424	1,342
Rubella (German measles)	2	2	5	282	138	382
Syphilis (Primary & Secondary): Civilian	686	1,491	593	23,918	23,374	16,439
Military	2	3	3	149	104	107
Toxic Shock syndrome	5	7	7	219	204	217
Tuberculosis	254	371	445	12,391	12,121	12,494
Tularemia	10	6	6	87	113	113
Typhoid Fever	11	5	5	265	203	189
Typhus fever, tick-borne (RMSF)	27	28	28	325	363	372
Rabies, animal	68	118	105	2,806	2,538	2,999

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1989		Cum. 1989
Anthrax	-	Leptospirosis (Wis. 1, Mo. 1)	64
Botulism: Foodborne (Alaska 1)	15	Plague	3
Infant (Calif. 1)	8	Poliomyelitis, Paralytic	-
Other	5	Psittacosis (Fla. 1, Wyo. 1, Utah 1)	59
Brucellosis (Wis. 1, Calif. 2)	54	Rabies, human	1
Cholera	-	Tetanus (Wash. 1)	31
Congenital rubella syndrome	1	Trichinosis	14
Congenital syphilis, ages < 1 year	81		
Diphtheria	1		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†One of the 240 reported cases for this week was imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending August 5, 1989 and August 6, 1988 (31st Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	20,118	3,431	377	52	385,980	401,518	19,934	13,409	1,420	1,418	558	94
NEW ENGLAND	841	175	15	2	11,185	12,282	413	652	51	54	37	6
Maine	41	9	5	-	184	238	9	30	4	1	5	-
N.H.	30	17	-	-	108	158	42	42	8	4	1	-
Vt.	8	11	2	-	40	84	26	47	5	-	-	-
Mass.	444	53	6	2	4,221	4,320	126	393	23	37	24	4
R.I.	49	35	-	-	824	1,052	23	44	3	3	7	1
Conn.	269	50	3	-	5,808	6,430	187	96	8	9	-	1
MID. ATLANTIC	5,633	332	48	5	49,729	62,507	2,337	2,039	129	182	136	12
Upstate N.Y.	577	154	15	4	8,537	7,903	543	399	54	6	45	2
N.Y. City	2,957	70	2	1	22,097	28,013	228	783	24	153	13	8
N.J.	1,408	-	31	-	9,353	9,040	260	391	17	5	27	1
Pa.	691	108	-	-	9,742	17,551	1,306	466	34	18	51	1
E.N. CENTRAL	1,583	516	115	3	72,037	65,710	1,139	1,690	167	58	153	3
Ohio	287	111	32	1	19,391	15,065	238	331	27	13	78	-
Ind.	243	93	24	1	5,129	5,134	125	288	20	22	30	1
Ill.	687	90	24	1	23,592	19,036	510	433	63	14	13	2
Mich.	288	194	27	-	18,608	20,729	174	402	35	9	21	-
Wis.	78	28	8	-	5,317	5,746	92	236	22	-	11	-
W.N. CENTRAL	453	143	15	3	17,936	16,437	726	583	60	16	26	1
Minn.	93	5	-	1	1,923	2,282	76	67	13	3	2	-
Iowa	35	20	4	-	1,588	1,255	53	23	10	1	5	-
Mo.	218	59	-	-	10,738	9,335	396	404	20	7	10	-
N. Dak.	6	6	1	-	77	102	4	16	3	1	1	-
S. Dak.	4	5	3	-	151	321	9	7	5	-	1	-
Nebr.	16	6	3	-	873	956	56	16	-	2	2	1
Kans.	81	41	4	2	2,586	2,186	134	50	9	2	5	-
S. ATLANTIC	4,313	691	62	21	108,830	114,125	1,735	2,587	212	207	73	1
Del.	55	26	1	-	1,802	1,730	27	96	5	4	7	-
Md.	412	83	13	2	12,133	11,583	412	447	19	21	17	-
D.C.	345	6	-	-	7,245	8,362	4	18	2	-	-	-
Va.	315	109	26	-	9,033	8,128	198	190	41	131	5	-
W. Va.	28	12	13	-	841	836	11	60	6	3	-	-
N.C.	278	87	4	1	16,275	16,343	269	629	59	-	22	1
S.C.	193	20	-	-	9,980	8,515	33	345	3	7	3	-
Ga.	652	63	1	-	21,089	21,890	204	264	9	6	11	-
Fla.	2,035	285	4	18	30,432	36,748	577	538	68	35	8	-
E.S. CENTRAL	471	339	18	1	31,871	31,555	230	946	97	4	26	-
Ky.	70	90	6	1	3,085	3,059	74	255	32	3	4	-
Tenn.	167	52	-	-	10,590	10,680	88	513	20	-	14	-
Ala.	137	136	12	-	10,177	9,964	47	127	41	1	8	-
Miss.	107	59	-	-	8,019	7,852	21	51	4	-	-	-
W.S. CENTRAL	1,794	462	42	2	42,092	44,847	2,239	1,311	92	328	28	14
Ark.	50	12	5	-	4,854	4,398	139	44	9	6	1	-
La.	291	37	9	-	8,658	9,053	178	234	11	1	4	-
Okla.	91	38	10	-	3,575	4,103	240	134	19	19	19	-
Tex.	1,362	375	18	2	25,005	27,293	1,682	899	53	302	4	14
MOUNTAIN	634	124	7	2	8,442	8,868	2,948	872	138	107	32	2
Mont.	10	3	-	-	117	282	35	34	4	2	2	1
Idaho	16	-	-	1	116	227	106	75	8	3	-	-
Wyo.	12	2	-	-	57	130	28	4	2	-	-	-
Colo.	224	56	1	1	1,783	2,012	340	110	40	44	3	-
N. Mex.	52	7	1	-	832	822	391	124	27	2	2	-
Ariz.	168	45	2	-	3,186	3,188	1,527	325	30	47	15	1
Utah	41	9	1	-	260	343	272	64	18	4	6	-
Nev.	111	2	2	-	2,081	1,864	247	136	9	5	4	-
PACIFIC	4,396	649	55	13	43,878	45,187	8,167	2,729	474	460	47	55
Wash.	312	-	2	1	3,616	4,115	1,943	612	137	38	13	5
Oreg.	151	-	-	-	1,772	1,898	1,452	295	49	9	1	1
Calif.	3,825	610	49	12	37,612	38,183	4,170	1,722	277	401	30	45
Alaska	9	9	4	-	588	616	475	38	5	4	1	-
Hawaii	99	30	1	-	290	375	127	62	6	8	2	4
Guam	1	-	-	-	-	89	-	-	-	-	-	-
P.R.	884	60	2	1	614	847	122	149	14	16	-	8
V.I.	26	-	-	-	404	254	-	4	-	-	-	-
Amer. Samoa	-	-	-	-	-	61	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	34	-	-	-	-	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending August 5, 1989 and August 6, 1988 (31st Week)

Reporting Area	Malaria	Measles (Rubeola)					Meningococcal infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	1989	Cum. 1989	Cum. 1988
UNITED STATES	687	234	8,555	6	386	1,988	1,794	58	3,523	110	1,568	1,424	2	282	138
NEW ENGLAND	37	-	270	-	24	107	134	5	67	5	235	176	-	6	2
Maine	-	-	-	-	-	7	13	-	-	2	6	11	-	-	-
N.H.	2	-	8	-	-	87	15	2	12	-	5	33	-	4	-
Vt.	1	-	1	-	-	-	6	1	1	-	6	2	-	1	-
Mass.	22	-	27	-	17	3	68	2	47	2	196	114	-	1	1
R.I.	6	-	36	-	3	-	1	-	-	-	11	4	-	-	1
Conn.	6	-	196	-	4	10	31	-	7	1	11	12	-	-	-
MID. ATLANTIC	113	6	568	-	160	796	255	2	203	-	85	71	2	23	12
Upstate N.Y.	21	-	41	-	96	31	87	2	127	-	42	41	2	10	2
N.Y. City	39	6	62	-	14	41	31	-	18	-	3	1	-	13	7
N.J.	27	-	279	-	-	197	55	-	11	-	14	4	-	-	1
Pa.	26	-	186	-	50	527	82	-	47	-	26	25	-	-	2
E.N. CENTRAL	56	188	1,885	4	61	179	224	16	418	4	156	172	-	21	23
Ohio	8	-	626	-	35	23	85	-	114	-	33	25	-	3	-
Ind.	7	-	51	-	-	57	26	15	38	4	17	55	-	-	-
Ill.	24	-	813	-	-	71	62	-	130	-	58	25	-	16	19
Mich.	11	188	259	45	12	23	39	1	108	-	26	24	-	1	4
Wis.	6	-	136	-	14	5	13	-	30	-	22	43	-	1	-
W.N. CENTRAL	22	1	556	-	4	12	66	2	368	2	76	89	-	5	-
Minn.	7	-	12	-	-	11	10	-	1	-	11	36	-	-	-
Iowa	2	1	6	-	1	-	2	1	27	1	12	19	-	1	-
Mo.	7	-	299	-	-	1	27	-	49	-	46	15	-	3	-
N. Dak.	1	-	-	-	-	-	-	-	-	-	-	11	-	-	-
S. Dak.	1	-	-	-	-	-	6	-	-	-	1	4	-	-	-
Nebr.	1	-	108	-	2	-	13	-	5	-	3	-	-	-	-
Kans.	3	-	132	-	1	-	8	1	276	1	3	4	-	1	-
S. ATLANTIC	119	16	439	1	30	276	300	10	582	7	125	138	-	8	16
Del.	3	-	62	-	1	-	2	-	1	-	1	5	-	-	-
Md.	21	2	37	11	17	11	53	4	348	1	13	26	-	2	1
D.C.	5	-	7	-	3	-	15	-	80	-	-	-	-	-	-
Va.	20	-	19	-	3	143	28	-	68	-	9	16	-	-	11
W. Va.	2	-	51	-	-	6	11	-	10	1	18	4	-	-	-
N.C.	17	1	168	-	-	1	43	3	23	4	27	37	-	1	-
S.C.	6	2	2	-	-	-	16	1	19	-	-	1	-	-	-
Ga.	9	-	1	-	1	-	54	-	11	-	16	21	-	-	1
Fla.	37	11	92	-	5	115	78	2	24	1	41	28	-	5	3
E.S. CENTRAL	8	23	184	-	-	68	58	3	138	16	73	43	-	2	-
Ky.	-	-	20	-	-	35	35	-	9	-	1	12	-	-	-
Tenn.	1	23	119	-	-	-	4	1	62	10	27	15	-	2	-
Ala.	5	-	45	-	-	-	16	1	16	6	43	12	-	-	-
Miss.	2	-	-	-	-	33	3	N	N	-	2	4	-	-	-
W.S. CENTRAL	35	-	2,983	1	40	14	120	11	1,208	1	124	74	-	36	6
Ark.	-	-	1	15	3	1	7	-	124	-	16	8	-	-	2
La.	2	-	9	-	-	-	32	3	491	-	6	11	-	5	-
Okla.	4	-	121	-	-	8	17	3	180	1	21	28	-	1	1
Tex.	29	-	2,852	-	37	5	64	5	413	-	81	27	-	30	3
MOUNTAIN	16	20	319	-	19	131	49	5	132	9	427	405	-	34	5
Mont.	1	-	12	-	1	16	1	-	2	5	26	1	-	1	-
Idaho	2	-	-	-	2	1	2	1	14	1	54	251	-	31	-
Wyo.	1	-	-	-	-	-	-	-	7	-	-	1	-	1	-
Colo.	2	3	62	-	1	114	18	-	21	-	23	14	-	-	1
N. Mex.	1	-	16	-	15	-	1	N	N	2	9	13	-	-	-
Ariz.	6	7	119	-	-	-	22	4	80	-	300	102	-	-	-
Utah	-	10	110	-	-	-	5	-	3	1	14	22	-	-	3
Nev.	3	-	-	-	-	-	-	-	5	-	1	1	-	1	1
PACIFIC	281	-	1,351	-	48	405	586	4	417	66	267	256	-	147	74
Wash.	24	-	20	-	12	2	62	3	35	34	107	54	-	-	-
Oreg.	17	-	-	-	16	3	42	N	N	-	7	15	-	2	-
Calif.	230	-	1,313	-	12	366	479	-	369	31	148	133	-	122	52
Alaska	4	-	-	-	-	-	4	1	2	-	-	6	-	-	-
Hawaii	6	-	18	-	8	12	1	-	11	1	5	48	-	23	22
Guam	-	U	-	U	-	1	-	U	-	U	-	-	U	-	1
P.R.	1	22	436	-	-	190	4	-	8	-	4	11	-	6	1
V.I.	-	-	4	-	-	-	-	-	11	-	-	-	-	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
C.N.M.I.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.
N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending August 5, 1989 and August 6, 1988 (31st Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	23,918	23,374	219	12,391	12,121	87	265	325	2,806
NEW ENGLAND	993	640	8	334	300	2	21	6	6
Maine	5	9	3	12	16	-	-	-	1
N.H.	9	6	-	16	6	-	-	-	1
Vt.	-	2	-	5	2	-	-	-	-
Mass.	303	255	2	172	177	2	11	3	2
R.I.	17	19	-	37	26	-	5	1	-
Conn.	659	349	3	92	73	-	5	2	2
MID. ATLANTIC	4,350	5,257	35	2,341	2,368	2	75	36	418
Upstate N.Y.	490	308	6	189	323	1	13	8	26
N.Y. City	2,275	3,609	2	1,315	1,230	-	42	3	-
N.J.	817	538	9	412	411	-	14	18	-
Pa.	768	802	18	425	404	1	6	7	392
E.N. CENTRAL	1,125	689	31	1,325	1,312	3	27	46	66
Ohio	81	65	9	237	258	-	4	23	5
Ind.	40	36	5	114	139	1	2	16	2
Ill.	482	321	5	596	550	-	17	5	15
Mich.	377	230	12	300	303	1	3	2	6
Wis.	145	37	-	78	62	1	1	-	38
W.N. CENTRAL	191	140	27	300	313	37	5	45	372
Minn.	26	14	7	62	50	-	1	-	72
Iowa	21	16	4	28	28	-	2	1	110
Mo.	97	82	5	129	159	26	1	40	27
N. Dak.	2	2	-	11	9	-	-	1	37
S. Dak.	-	-	3	16	22	6	-	1	55
Nebr.	17	20	5	14	9	1	-	-	36
Kans.	28	6	3	40	36	4	1	2	35
S. ATLANTIC	8,849	8,297	20	2,577	2,591	2	22	94	857
Del.	98	68	1	25	22	-	2	-	18
Md.	450	463	1	207	265	-	5	12	236
D.C.	560	404	1	111	118	-	2	-	2
Va.	328	251	4	211	239	2	3	5	169
W. Va.	10	7	-	44	50	-	-	2	38
N.C.	580	476	5	307	233	-	2	52	4
S.C.	491	413	3	302	287	-	-	12	140
Ga.	1,885	1,359	3	393	416	-	3	9	150
Fla.	4,447	4,856	1	977	963	-	5	2	100
E.S. CENTRAL	1,642	1,159	4	998	986	6	2	32	230
Ky.	38	40	1	244	245	1	1	10	99
Tenn.	724	501	2	286	267	4	-	20	55
Ala.	501	340	1	295	301	-	1	2	75
Miss.	379	278	-	183	173	1	-	-	1
W.S. CENTRAL	3,388	2,548	21	1,477	1,540	26	11	44	421
Ark.	206	140	1	153	163	18	-	11	59
La.	777	496	-	196	190	-	1	-	3
Okla.	57	90	11	126	150	8	1	29	69
Tex.	2,348	1,822	9	1,002	1,037	-	9	4	291
MOUNTAIN	467	454	32	283	339	6	4	20	153
Mont.	1	3	-	11	5	-	-	14	58
Idaho	1	2	2	15	11	-	-	2	2
Wyo.	3	1	2	-	2	-	-	1	46
Colo.	53	72	5	12	47	2	1	3	11
N. Mex.	20	35	3	53	66	1	-	-	15
Ariz.	145	109	9	140	161	-	2	-	17
Utah	12	11	9	24	18	2	1	-	2
Nev.	232	221	2	28	29	1	-	-	2
PACIFIC	2,913	4,190	41	2,756	2,372	3	98	2	283
Wash.	136	135	2	148	124	-	6	-	-
Oreg.	149	178	-	91	87	1	5	1	-
Calif.	2,617	3,848	38	2,385	2,042	2	84	1	221
Alaska	3	8	-	32	24	-	-	-	62
Hawaii	8	21	1	100	95	-	3	-	-
Guam	-	3	-	-	16	-	-	-	-
P.R.	324	369	-	189	129	-	-	-	37
V.I.	6	1	-	4	5	-	-	-	-
Amer. Samoa	-	-	-	-	3	-	-	-	-
C.N.M.I.	-	1	-	-	17	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending August 5, 1989 (31st Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	>65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	580	396	112	46	14	11	58
Boston, Mass.	160	99	36	17	1	6	19
Bridgeport, Conn.	49	33	10	2	2	2	6
Cambridge, Mass.	24	21	2	1	-	-	7
Fall River, Mass.	31	24	5	2	-	-	-
Hartford, Conn.	40	24	8	8	-	-	3
Lowell, Mass.	30	23	6	-	1	-	1
Lynn, Mass.	14	12	2	-	-	-	-
New Bedford, Mass.	24	17	5	2	-	-	-
New Haven, Conn.	33	14	7	7	5	-	8
Providence, R.I.	32	22	8	1	-	1	2
Somerville, Mass.	6	6	-	-	-	-	-
Springfield, Mass.§	35	28	6	1	-	-	3
Waterbury, Conn.	24	20	2	1	1	-	-
Worcester, Mass.	78	53	15	4	4	2	9
MID. ATLANTIC	2,380	1,505	439	296	79	61	111
Albany, N.Y.	37	23	11	1	-	2	2
Allentown, Pa.	22	18	2	1	1	-	-
Buffalo, N.Y.	100	66	22	5	4	3	8
Camden, N.J.	44	24	13	3	3	1	-
Elizabeth, N.J.	15	11	1	2	1	-	-
Erie, Pa.†	37	23	8	4	1	-	1
Jersey City, N.J.	38	25	2	4	2	3	3
N.Y. City, N.Y.	1,285	807	231	178	40	29	50
Newark, N.J.	55	28	10	11	2	4	2
Paterson, N.J.	28	17	2	3	2	2	-
Philadelphia, Pa.	348	196	65	50	16	9	18
Pittsburgh, Pa.†	43	29	9	3	-	2	1
Reading, Pa.	29	19	4	2	2	1	3
Rochester, N.Y.	106	75	21	5	2	3	11
Schenectady, N.Y.	17	12	5	-	-	-	1
Scranton, Pa.†	32	24	6	1	1	-	3
Syracuse, N.Y.	92	62	17	10	2	1	5
Trenton, N.J.	21	17	2	2	-	-	1
Utica, N.Y.	10	7	1	2	-	-	-
Yonkers, N.Y.	28	22	5	-	-	1	2
E.N. CENTRAL	2,206	1,482	422	188	48	66	89
Akron, Ohio	55	44	9	1	-	1	3
Canton, Ohio	26	20	4	2	-	-	2
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	120	91	17	8	2	2	12
Cleveland, Ohio	144	84	34	10	4	12	2
Columbus, Ohio	148	96	27	13	6	6	-
Dayton, Ohio	95	69	20	2	1	3	6
Detroit, Mich.	270	169	47	41	5	8	5
Evansville, Ind.	34	25	8	1	-	-	1
Fort Wayne, Ind.	76	59	11	2	-	4	2
Gary, Ind.	23	14	7	1	1	-	1
Grand Rapids, Mich.	66	46	8	4	5	3	5
Indianapolis, Ind.	148	94	36	9	4	5	1
Madison, Wis.	48	35	4	3	2	4	8
Milwaukee, Wis.	122	88	19	6	1	6	5
Peoria, Ill.	42	29	11	1	-	1	4
Rockford, Ill.	46	31	5	5	3	2	4
South Bend, Ind.	32	22	6	2	-	2	2
Toledo, Ohio	94	62	16	8	3	5	4
Youngstown, Ohio	53	42	8	2	1	-	6
W.N. CENTRAL	719	519	126	33	23	18	35
Des Moines, Iowa	58	46	8	2	2	-	3
Duluth, Minn.	34	27	6	1	-	-	1
Kansas City, Kans.§	66	50	11	4	1	-	3
Kansas City, Mo.	96	64	20	8	2	4	4
Lincoln, Nebr.	19	16	2	-	1	-	5
Minneapolis, Minn.	153	105	31	10	3	4	9
Omaha, Nebr.	74	52	15	-	3	4	4
St. Louis, Mo.	108	77	14	5	9	3	3
St. Paul, Minn.	61	48	10	-	-	3	1
Wichita, Kans.	48	34	9	3	2	-	2
S. ATLANTIC	1,315	784	267	162	55	47	57
Atlanta, Ga.	146	90	25	19	6	6	4
Baltimore, Md.	214	113	62	28	9	2	8
Charlotte, N.C.	66	43	18	2	2	1	5
Jacksonville, Fla.	109	70	14	15	5	5	10
Miami, Fla.	179	102	38	25	11	3	1
Norfolk, Va.	45	31	6	4	2	2	3
Richmond, Va.	84	50	22	10	2	-	6
Savannah, Ga.	57	40	9	4	2	2	6
St. Petersburg, Fla.	56	43	4	1	-	8	1
Tampa, Fla.	67	41	19	6	-	1	3
Washington, D.C.	267	143	47	46	15	16	8
Wilmington, Del.	25	18	3	2	1	1	2
E.S. CENTRAL	772	487	170	65	23	27	35
Birmingham, Ala.	130	73	34	11	2	10	1
Chattanooga, Tenn.	57	39	12	4	2	-	1
Knoxville, Tenn.	87	65	11	8	2	1	8
Louisville, Ky.	93	55	24	10	3	1	4
Memphis, Tenn.	178	103	46	15	5	10	12
Mobile, Ala.	83	55	20	5	3	-	5
Montgomery, Ala.	29	21	3	5	-	-	-
Nashville, Tenn.	115	76	21	7	6	5	4
W.S. CENTRAL	1,691	1,051	344	181	59	56	60
Austin, Tex.	71	46	15	6	3	1	4
Baton Rouge, La.	19	12	3	1	2	1	1
Corpus Christi, Tex.§	42	30	8	3	-	1	-
Dallas, Tex.	123	75	20	16	7	5	1
El Paso, Tex.	71	40	12	11	5	3	3
Fort Worth, Tex	94	61	17	7	3	6	2
Houston, Tex.§	734	436	169	89	24	16	18
Little Rock, Ark.	59	34	12	4	4	5	2
New Orleans, La.	133	83	27	15	4	4	-
San Antonio, Tex.	191	124	38	17	4	8	19
Shreveport, La.	40	29	8	3	-	-	3
Tulsa, Okla.	114	81	15	9	3	6	7
MOUNTAIN	697	440	138	68	28	23	19
Albuquerque, N. Mex.	77	45	18	9	4	1	2
Colo. Springs, Colo.	32	22	8	1	1	-	4
Denver, Colo.	119	82	19	11	6	1	2
Las Vegas, Nev.	111	60	29	15	2	5	7
Ogden, Utah	21	17	1	-	2	1	-
Phoenix, Ariz.	175	105	34	22	7	7	-
Pueblo, Colo.	20	17	2	1	-	-	-
Salt Lake City, Utah	55	29	12	3	5	6	2
Tucson, Ariz.	87	63	15	6	1	2	2
PACIFIC	2,074	1,249	402	252	90	63	109
Berkeley, Calif.	21	13	4	4	-	-	1
Fresno, Calif.	74	42	13	7	5	7	6
Glendale, Calif.	46	27	13	4	1	1	2
Honolulu, Hawaii	86	66	10	6	2	2	10
Long Beach, Calif.	97	55	20	14	7	1	10
Los Angeles Calif.	739	408	154	103	45	12	16
Oakland, Calif.	71	41	13	10	6	1	5
Pasadena, Calif.	28	21	3	-	-	4	3
Portland, Oreg.	110	63	24	10	4	9	4
Sacramento, Calif.	127	79	28	14	3	3	8
San Diego, Calif.	161	78	32	21	8	12	12
San Francisco, Calif.	141	87	21	28	3	1	3
San Jose, Calif.	158	104	27	17	2	8	16
Seattle, Wash.	121	86	20	11	4	-	4
Spokane, Wash.	63	46	14	2	-	1	6
Tacoma, Wash.	41	33	6	1	-	1	3
TOTAL	12,434††	7,913	2,419	1,271	419	392	573

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza.

†Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

§Data not available. Figures are estimates based on average of past available 4 weeks.

Anomalies — Continued

birth, and calendar quarter of birth. Of 4246 control-babies, 3029 (71%) of control-mothers completed interviews. Data on maternal cocaine use and other maternal exposures were obtained through telephone interviews (*2,3*). Maternal cocaine use during early pregnancy was defined as reported cocaine use at any time from 1 month before pregnancy through the first 3 months of pregnancy.

Urinary tract anomalies* occurred in 276 babies and genital organ anomalies in 79; frequency-matched controls numbered 2837 and 2973, respectively. To assess the potential contribution of maternal recall bias, a second control group comprising all babies born with other major congenital anomalies was selected for each defect category. Conditional logistic regression was used to control for sampling design and potentially confounding variables.

Cocaine use early in pregnancy was reported by 1.4% of mothers of babies with urinary tract anomalies and by 0.5% of their controls, and 0.8% of mothers of babies with genital organ anomalies and 0.5% of their controls.

The risk for urinary tract anomalies was greater in infants born to mothers who reported using cocaine early in pregnancy (adjusted odds ratio=4.8, 95% CI=1.2–20.1). For genital organ defects, the adjusted odds ratio for self-reported cocaine users compared with nonusers was 2.3 (95% CI=0.7–7.9). The urogenital anomalies observed in infants of mothers exposed to cocaine were congenital hydronephrosis, the prune belly sequence, renal and ureteral agenesis, ambiguous genitalia, hypospadias with and without congenital chordee, and bifid scrotum.

Comparisons of exposure histories for mothers of babies with urogenital anomalies and babies with all other major birth defects also produced statistically significant odds ratios.

Reported by: Birth Defects and Genetic Diseases Br, Div of Birth Defects and Developmental Disabilities, Center for Environmental Health and Injury Control, CDC.

Editorial Note: Cocaine use in the United States has increased substantially during the past decade (*4–6*). Between 1979 and 1984, the number of women admitted to drug abuse treatment programs increased 378% (*6*). In 1985, an estimated 4.4 million women, most of whom were of childbearing age, had used cocaine at least once during the previous year, and an estimated 1.1 million women were regular users (*7*). In addition, in some areas of the country the number of babies exposed to cocaine before birth has dramatically increased in the past few years (*8–10*).

Although understanding of the adverse effects of cocaine use by pregnant women is limited, several studies suggest an association between cocaine use and abruptio placentae, spontaneous abortions, prematurity, impaired fetal growth, congenital urogenital anomalies, and neurobehavioral deficits (*9–12*). The ABDCCS is the first population-based case-control study to examine the association of maternal cocaine use with congenital urogenital anomalies. The findings are consistent with previous animal and clinical studies and suggest that women who report cocaine use early in pregnancy are at increased risk for bearing infants with urinary tract anomalies.

The pharmacokinetic effects of cocaine use could account for some of the congenital urinary tract anomalies among the infants of mothers reporting cocaine use early in pregnancy. Cocaine, which readily crosses the placenta, increases the circulating levels of norepinephrine and dopamine, thereby causing reduced blood flow to the fetus and systemic vasoconstriction. As a result, fetal hypoxia, infarction

*Include malformations of the kidney (such as renal agenesis) and malformations of the collecting system.

Anomalies — Continued

of specific organ/systems, and subsequent vascular disruption of morphogenesis are possible. Cocaine use during gestation could also be associated with other defects caused by fetal vascular disruptions (e.g., gastroschisis).

Potential methodologic concerns must be considered when this study is interpreted. Self-reports of cocaine use underestimate the number of users when compared with urine tests (*10*); thus, reliance on self-reports in the ABDCCS may have underestimated the true risk of urogenital anomalies associated with cocaine use. In addition, this study encompassed a period when cocaine was used less frequently than it is currently. Although confounding is a potential problem, adjusting the data for factors (such as maternal age, alcohol use, and use of illicit drugs other than cocaine) known to be associated with cocaine use and birth defects did not alter the study results. Finally, use of control-babies with other major birth defects to assess recall bias found no evidence of differential recall.

Because of the small number of babies with urogenital anomalies identified among mothers reporting cocaine use, the results of this study should be confirmed by larger studies in areas where current data can be obtained. In addition, prospective epidemiologic studies using a biologic marker of cocaine use may assist in determining the specific spectrum of malformations associated with maternal cocaine use. This study further emphasizes the need for pregnant women and women at risk for pregnancy to avoid substances that may harm the mother and/or the fetus.

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Progress in Chronic Disease Prevention

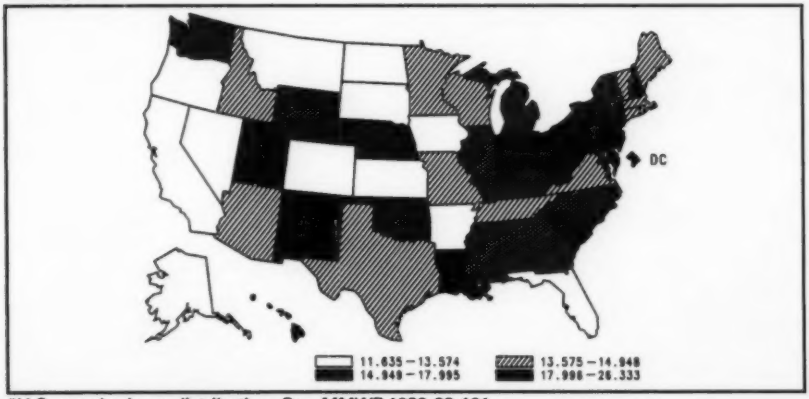
Chronic Disease Reports: Deaths from Diabetes — United States, 1986

In 1986, diabetes (*International Classification of Diseases, Ninth Revision, Clinical Modification* [ICD-9-CM] 250) was listed as the underlying cause of death for 37,178 persons in the United States. Diabetes mortality rates (age-standardized to the 1986 U.S. population) were lowest in Nevada (11.6 per 100,000) and highest in Delaware (26.3 per 100,000) (Figure 1, Table 1).

Diabetes-related deaths accounted for 1.8% of U.S. mortality and for 1% of years of potential life lost before age 65 (*1*). However, diabetes was mentioned as a contributory cause of death on 4.1 times as many death certificates as it was selected as the underlying cause (Table 2). Moreover, diabetes was not listed on approximately half of death certificates for persons with noninsulin-dependent diabetes (*2*). Thus, diabetes may be associated with approximately eight times as many deaths as indicated by underlying cause alone.

Rates of diabetes mortality declined in the 1970s, but the decline has slowed in recent years (*3*). Rates of diabetes mortality increase with age, are 6% higher in males than in females and 39% higher in nonwhites than in whites (*4*). Smoking, hypertension, and overweight are modifiable risk factors for death among diabetic persons (Table 2); estimates of deaths that could be averted by eliminating these risk factors are substantial (Table 2). Diabetes also contributes to end-stage renal disease, amputations, blindness, and other serious complications; associated risk factors include higher levels of glycemia, smoking, and hypertension. Assuming that risk-factor reduction among diabetic persons would have the same benefit as in the general population, more effective control of smoking, hypertension, and overweight should further decrease morbidity and mortality rates among diabetic persons.

CHRONIC DISEASE REPORTS: DIABETES MELLITUS, FIGURE 1. Age-adjusted diabetes mellitus-associated mortality rates per 100,000 persons, by quartile — United States, 1986



*U.S. standard age distribution. See *MMWR* 1989;38:191.

Diabetes — Continued

CHRONIC DISEASE REPORTS: DIABETES, TABLE 1. Age-adjusted diabetes mortality, by state — United States, 1986

State	Deaths	Rate per 100,000	Rank by rate
Alabama	719	17.9	14
Alaska	28	13.4	42
Arizona	466	14.3	31
Arkansas	336	12.4	47
California	3,028	12.3	48
Colorado	347	13.4	41
Connecticut	517	14.9	28
Delaware	158	26.3	1
District of Columbia	143	21.8	3
Florida	1,968	12.4	46
Georgia	857	16.5	18
Hawaii	165	18.8	7
Idaho	125	14.0	33
Illinois	1,722	15.0	25
Indiana	980	18.0	13
Iowa	444	12.8	44
Kansas	369	13.3	43
Kentucky	618	16.7	17
Louisiana	827	22.1	2
Maine	182	13.9	36
Maryland	697	17.7	15
Massachusetts	978	14.7	29
Michigan	1,495	17.3	16
Minnesota	613	13.6	39
Mississippi	402	15.7	22
Missouri	860	15.0	27
Montana	109	13.6	40
Nebraska	286	15.6	23
Nevada	89	11.6	51
New Hampshire	189	18.6	9
New Jersey	1,456	18.1	12
New Mexico	241	20.2	4
New York	3,076	16.1	19
North Carolina	946	15.8	20
North Dakota	88	12.1	49
Ohio	2,041	18.8	8
Oklahoma	503	15.0	26
Oregon	331	11.6	50
Pennsylvania	2,513	18.4	11
Rhode Island	169	14.5	30
South Carolina	544	18.5	10
South Dakota	105	12.7	45
Tennessee	667	13.8	37
Texas	1,959	14.3	32
Utah	222	19.8	5
Vermont	76	13.9	35
Virginia	703	13.9	34
Washington	656	15.3	24
West Virginia	399	19.3	6
Wisconsin	707	13.7	38
Wyoming	59	15.8	21
Total	**37,178**	**15.4**	

Diabetes — Continued

CHRONIC DISEASE REPORTS: DIABETES, TABLE 2. Diabetes (ICD-9-CM 250) indices — United States, 1986

Index	No.	Rate per 100,000
Mortality		
Underlying cause	37,178	15
Multiple cause*	150,120	62
Prevalence		
Self-reported†	5,547,000	3,373
Total, self-reported and undiagnosed§	10,470,108	6,600
Hospitalizations¶	473,863	197
Years of potential life lost before age 65**	121,117	50

Risk factor	Crude prevalence (%)††	Relative risk	Population-attributable risk (%; nonadditive)§§	Estimated attributable deaths (nonadditive)¶¶
Smoking (current)	27.1***	2.3†††	26.1	39,181
Hypertension				
Systolic blood pressure				
(>159mm Hg)	21.4***	1.8§§§	13.7	20,579
(140–159mm Hg)	25.9***	1.3§§§	6.2	9,340
Total			19.9	29,919
Overweight¶¶¶				
MRW ≥130	22.4§§§	1.4§§§	8.2	12,310

*NCHS. Vital statistics mortality data, multiple cause of death detail, 1986 [machine-readable public-use data tape]. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988 (ICD-9-CM 250).

†Calculated for persons aged 18–74 years. NCHS. Current estimates from the National Health Interview Survey: United States, 1987. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988; DHHS publication no. (PHS)88-1594. (Vital and health statistics; series 10, no. 166).

§Adjusted to 1986 population aged 20–74 years, including persons with self-reported diabetes and those with undiagnosed diabetes as determined by National Diabetes Data Group criteria (i.e., fasting plasma glucose ≥140 mg/dL, or fasting plasma glucose <140 mg/dL with 1- and 2-hour plasma glucose ≥200 mg/dL). Recalculated from NCHS. Prevalence of diagnosed diabetes, undiagnosed diabetes, and impaired glucose tolerance in adults 20–74 years of age, United States, 1976–80. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1987; DHHS publication no. (PHS)87-1687. (Vital and health statistics; series 11, no. 237).

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††Prevalences in different studies and samples of the U.S. population.

§§Population-attributable risk (PAR) is the percentage of mortality attributable to the specific risk factor in the population. Because persons may be exposed to more than one risk factor, estimated PAR from different risk factors should not be added. CDC. Chronic disease reports in the *Morbidity and Mortality Weekly Report* (*MMWR*). MMWR 1989;38(no. S-1).

¶¶Estimated attributable deaths = PAR × multiple cause mortality. Because persons may be exposed to more than one risk factor, estimated attributable deaths from different risk factors should not be added. *(Footnotes continued on next page.)*

Diabetes — Continued

***Estimated from NCHS. Second National Health and Nutrition Examination Survey, 1976–80 [machine-readable public-use data tape]. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service.
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Reported by: Div of Surveillance and Epidemiologic Studies, Epidemiology Program Office; Div of Diabetes Translation, Center for Chronic Disease Prevention and Health Promotion, CDC.

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End-Stage Renal Disease Associated with Diabetes — United States, 1988

End-stage renal disease (ESRD) is a major complication of diabetes and requires dialysis or transplantation for survival. The Medicare program provides reimbursement* for >90% of ESRD treatment in the United States and maintains information that provides a basis for surveillance of ESRD (*1*). In 1987, 33,393 new cases of ESRD were reported to Medicare, of which 9482 (28.4%) were attributed to diabetes. Previous studies indicate that the age-adjusted incidence of diabetes-attributable ESRD is three to seven times higher among blacks, American Indians, and Mexican Americans than among whites (*2,3*).

Of the 18,854 ESRD cases reported to Medicare in January–June 1988, 4535 (24.1%) were attributed to diabetes: 2577 (56.8%) to adult-onset† type, 1836 (40.5%) to juvenile type, and 122 (2.7%) unclassified. ESRD was more commonly attributed to adult-onset diabetes among blacks (62.5%), Asians (67.7%), and American Indians (78.7%) than among whites (55.8%).

ESRD cases attributed to adult-onset diabetes were most frequent in older age groups (Figure 1). ESRD cases attributed to juvenile diabetes are characterized by a bimodal distribution (Figure 1). However, because many noninsulin-dependent diabetes mellitus (NIDDM) patients are treated with insulin, they are often misclassified in surveys as insulin-dependent diabetes mellitus (IDDM) patients. This may account for the apparent increase in juvenile-diabetes–related ESRD cases in older age groups.

*More than $3 billion for the care of approximately 147,000 persons in 1987.
†In 1988, diabetes-attributable ESRD was subclassified by treatment providers into "adult-onset" and "juvenile" types (the nomenclature of the *International Classification of Diseases, Ninth Revision* [ICD-9]) without explicit criteria. Although these categories cannot be directly translated into the preferred categories of noninsulin-dependent diabetes mellitus and insulin-dependent diabetes mellitus, respectively, they allow some assessment of the contributions of the two major types of diabetes to ESRD.

Renal Disease — Continued

Reported by: Bur of Data Management and Strategy, Health Care Financing Administration. Div of Diabetes Translation, Center for Chronic Disease Prevention and Health Promotion, CDC.

Editorial Note: Adult-onset diabetes accounts for most diabetes-related ESRD in the United States, especially among minority populations. The Medicare data are consistent with findings from medical record reviews in Nebraska (*4*), Michigan (*5*), and a large health-maintenance organization (*6*). Refinement of the classification of type of diabetes and evaluation of its precision would increase the value of the Medicare information system for surveillance of ESRD associated with diabetes.

Control of hyperglycemia and hypertension are recommended for preventing and slowing the progression of diabetes-associated renal disease (*7*). These interventions are emphasized in state and territorial diabetes-control programs and in public and professional education programs initiated by the American Diabetes Association and the National Kidney Foundation. Close monitoring for early markers of renal disease can identify persons at high risk for ESRD and allow targeting of dietary and pharmacologic interventions. Additional study of the application of these measures is being supported by the National Institute of Diabetes and Digestive and Kidney Diseases (*8*).

Chronic disease control programs should consider prevention of NIDDM as an additional approach to reduce ESRD and other complications of diabetes (*9,10*). Effective dietary and physical activity approaches are urgently needed, especially for families predisposed to NIDDM and for high-risk populations (e.g., blacks, American Indians, and Mexican Americans).

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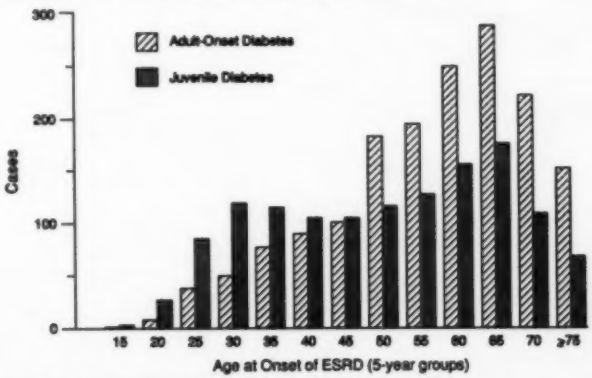
FIGURE 1. Age distribution of end-stage renal disease (ESRD) attributed to diabetes, by type of diabetes — United States, January–June 1988*



*Preliminary data from the Health Care Financing Administration.

Renal Disease — Continued

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